

INSECTS ASSOCIATED WITH THE FAECAL PELLETS OF THE KOALA, *PHASCOLARCTOS CINEREUS* GOLDFUSS

A. MELZER¹, M.A. SCHNEIDER² and D. LAMB¹

¹Department of Botany, The University of Queensland, Brisbane, Qld 4072.

²Department of Entomology, The University of Queensland, Brisbane, Qld 4072.

Abstract

Faecal pellets of koalas (*Phascolarctos cinereus* Goldfuss) near Springsure were collected to determine the insects responsible for observed damage and decomposition. A beetle, *Ptinus* sp. (Anobiidae), and two moths, *Argyrotoxa pompica* Turner (Tortricidae) and *Blastobasis* sp. (Blastobasidae), were bred from the pellets. Four species of parasitic wasps, *Pycnobracon* sp., *Choeras* sp. (Braconidae), *Dialuomorpha* sp. (Eulophidae) and a pteromalid (Pteromalinae) were also recovered.

A large population of koalas (*Phascolarctos cinereus*) exists near Springsure (148°02'E 24°06'S) in the central highlands of Queensland. Koala faecal pellets accumulated at the bases of *Eucalyptus* trees were examined as part of an extensive study of the ecology of this koala population. Evidence of insect attack on the pellets, in the form of eroded exteriors, small holes and tunnelled interiors filled with frass, was common. Pellets were placed in sealed containers fitted with a device for trapping emerging adult insects. One species of beetle, *Ptinus* sp. (Anobiidae), two species of moths, *Argyrotoxa pompica* Turner (Tortricidae) and *Blastobasis* sp. (Blastobasidae), and four species of wasps, *Pycnobracon* sp. and *Choeras* sp. (Braconidae), *Dialuomorpha* sp. (Eulophidae) and a pteromalid (Pteromalinae) emerged from the pellets.

The larva of *Ptinus* sp. bored through the interior of the pellet, leaving a frass filled chamber surrounded by an intact outer casing. Beetles of the subfamily Ptiniinae are recorded as feeding on dry animal and vegetable material while the larvae have been found in animal nests, dung and stored food products (Lawrence and Britton 1991).

Pupal cases of what was almost certainly *Argyrotoxa pompica* were found attached to the outside of pellets in the containers after the adult insects had emerged and been collected. The species of *Blastobasis* recovered from the pellets was not determined but larvae of *B. sarcophaga* Meyrick and a second unnamed species have been reared from *Eucalyptus* leaf litter (Common 1990).

Wasps of the three families Braconidae, Eulophidae and Pteromalidae all parasitise beetle and moth larvae. *Ptinus* sp. is a possible host for *Pycnobracon* which is recorded (Naumann 1991) as parasitising the larvae of cryptocephaline Chrysomelidae, none of which was collected with the faecal pellets. The only host record for the microgastrine braconid genus, *Choeras* is the rearing of *C. epaphus* from a moth, *Euchaetis parthenopa* Meyrick (Oecophoridae) (Austin and Dangerfield 1992). The species of *Choeras* collected in this study is undescribed (*Austin pers. comm.*); perhaps further collecting will enable its host to be determined. Mazanec (1990) described

the life history of a *Diaulomorpha* sp. as an external parasitoid of the jarrah leafminer, *Perthida glyphopa* (Incurvariidae). The present study did not reveal the host of the *Diaulomorpha* sp. collected but since it emerged from the dung, the host was probably one of the moths mentioned above and not a leafminer. The single pteromalid specimen recovered from the pellets was in very poor condition and without a gaster. Identification beyond subfamily was therefore not possible.

An unidentified dung beetle (Superfamily Scarabaeoidea) was observed to bury fresh faecal pellets and partially buried pellets were found on a few occasions. This activity, however, was observed only during the wet season, when fresh pellets were softened by rain.

Koalas feed predominantly on the leaves of *Eucalyptus* spp., relying on the foliage for nutrients and water. The digestive system conserves water and the faecal pellets produced are hard, dry pellets of compressed fragments of *Eucalyptus* leaves (Cork and Sanson 1990). The pellets which accumulate at the bases of *Eucalyptus* trees may provide an extension of resources available to detritivores adapted to *Eucalyptus* leaf litter. Some of the insects observed, however, may be especially adapted to utilise the resources in the pellets.

The exploitation of koala faecal pellets by coleopteran and lepidopteran larvae would increase the rate of decomposition of the pellets. This has implications for the practice of using the accumulated koala pellets as a survey indicator of koala habitat utilisation.

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